IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: HEDMAN et al.	Art Unit: 3643
Serial No.: 10/014,727	
Filed: December 10, 2001	Examiner: Kurt C. Rowan
Title: METHOD OF KILLING ORGANISMS AND REMOVAL OF TOXINS IN ENCLOSURES	

APPEAL BRIEF

Mail Stop: Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In reference to the above-identified application, Appellants hereby submit a Notice of Appeal pursuant to 35 U.S.C. § 134(a), and an Appeal Brief pursuant to 37 C.F.R. § 41.37. Appellants respectfully submit that this Appeal Brief is timely filed under 37 C.F.R. §§ 41.37(a)(1) and (e), and the Appeal Brief meets the substantive requirements of § 41.37(c)(1). Appellants request entry, consideration, and favorable action on this appeal at the Board's earliest convenience.

In accordance with § 41.37(c)(1), Appellants present the following items under the headings prescribed therein.

Real Party in Interest

TPE Associates, LLC is the real party in interest as assignee of the subject application pursuant to an assignment recorded at reel 017707, frame 0753.

Related Appeals and Interferences

Neither the assignee nor Appellants are aware of any other appeals or interferences that would bear on the Board's decision in this appeal.

Status of Claims

The Appellants are hereby filing a Notice of Appeal from the rejection of Claims 18-23, 26-30, 36-40 and 42-55 as stated in the Office Action mailed on June 20, 2008 (hereinafter the "Office Action"). Claims 1-17, 24-25, 31-35 and 41 were previously cancelled.

Status of Amendments

No claim amendments are currently proposed and (to the best of Appellants' understanding) none have been denied entry.

Summary of Claimed Subject Matter

The present invention is directed toward a method of sanitizing an enclosed space. Specifically, as shown in Figure 2, and as recited in Claims 18, 20 and 26, an environmentally acceptable gas, such as air or nitrogen, is heated to a temperature lethal to undesirable organisms (36). *See, e.g.*, p. 9, ll. 8-12. The heated gas is then

directed into the enclosed space (*e.g.*, through an ingress duct (38)) for a time sufficient to raise the temperature of the enclosed space to the lethal temperature. *See*, *e.g.*, p. 6, ll. 10-17 and p. 9, ll. 8-12. The organisms are terminated by the gas maintained at the lethal temperature. *Id.*

Claims 18, 20 and 26 further provide that the heated gas and the dead organisms are extracted from the enclosure by an exhaust unit (44) and a filter (24). *See*, *e.g.*, p. 9, ll. 19-22. Thus, not only are the undesirable organisms killed within the enclosed space, the residue of the destroyed organisms are removed from the enclosed space via the filter (24) (*e.g.*, HEPA filter, etc.), thereby eliminating a source of allergen that can cause additional health problems to occupants of the space. *See*, *e.g.*, p. 6, ll. 15-21 and p. 9, ll. 13-14.

Claim 20 further provides that a plurality of temperature-indicating devices (*e.g.*, probes (32)) are disposed within the enclosed structure at various locations, such as onto the surface of a wall, floor or other space, or inserted through a structure into an interior space, *e.g.*, within a wall cavity or crawl space. *See*, *e.g.*, p. 8, ll. 16-22. The temperature-indicating devices are used to monitor the temperature within the enclosed space while the heated gas is being introduced to ensure that the enclosed structure is brought to the lethal temperature. *Id.*

Grounds of Rejection to be Reviewed on Appeal

The Appellants address the following issues in the arguments presented below with respect to the pending claims:

1. Whether Claims 18-23, 26-30, 36-40 and 42-55 are patentable under 35 U.S.C. § 103(a) over Forbes (U.S. Pat. No. 4,817,329) in view of Brenner et al. (U.S. Pat. No. 5,806,238) ("Brenner").

2. Whether Claims 18, 20, 21, 23, 26-29, 36-40, 42-55 are patentable under 35 U.S.C. § 103(a) over Forbes in view of Montellano (U.S. Pat. No. 1,885,854).

Argument

I. THE FORBES REFERENCE

Forbes provides a method of killing termites and other insects by insulating a structure, and heating the air inside to an elevated temperature as necessary to heat the wood of the structure (*e.g.*, to around 120° F), thereby killing the termites. *See*, *e.g.*, col. 1, ll. 5-8 and col. 4, ll. 31-33. As acknowledged by the Examiner, ***Forbes fails to disclose or suggest the extraction of dead organisms from the treated structure***, and would simply leave the dead organisms (*i.e.*, termites) in place. *See*, *e.g.*, Office Action at p. 3 ("Forbes does not disclose filtering the heated gas from the enclosure for extracting heat killed organisms"). More to the point, Forbes fails to disclose or suggest the step of filtering the heated interior air or other gas to remove microscopic particles such as mold spores and bacteria. Forbes is not concerned with any type of filtration at all, much less filtration to remove microscopic particles.

Forbes also fails to disclose or suggest the use of probes (*e.g.*, temperature-indicating devices) ***for monitoring temperatures inside the structure***. Instead, Forbes provides that temperatures inside the structure, or more particularly, the temperature of the wood of the structure, is estimated using "thermal gradients." *See*, *e.g.*, col. 4, ll. 46-63 ("An example of practical ranges and times, a 4x4 wooden post at about 75 degrees F., exposed to convecting air at 160 degrees F. will heat the post to 120 degrees F. at its innermost point in about one hour.").

II. THE BRENNER REFERENCE

Brenner provides a vacuum device for chasing and collecting pests, such as insects. *See*, *e.g.*, Abstract. Specifically, as shown in Figure 1, Brenner provides a vacuum device having a hand held intake unit 12 and a heater/air exhaust unit 146 that are in communication with a central filter 84 and housing unit 144. The operator uses the heater/air exhaust unit 146 to project heated air in order to force pests from their harborages. *See*, *e.g.*, col. 11, l. 63 - col. 12, l. 9. The operator then uses the intake

unit 12 to collect the pests in the vacuum. *See, e.g.*, col. 12, ll. 37-49. The filter unit 84 includes a HEPA filter and is arranged to filter the air that passes from the intake unit 12 to the heater/air exhaust unit 146. It should be noted, however, that ***the filter unit 84 is not used to filter remains of organisms from heated air***, but to filter debris (*e.g.*, dust, etc.) from ambient air. *See, e.g.*, Abstract. In this respect, Brenner functions like a HEPA filter vacuum cleaner.

III. THE MONTELLANO REFERENCE

Montellano provides an apparatus for killing macroscopic flying insects (*e.g.*, mosquitoes). Montellano does so by way of a suction device(s) that collects insects. *See, e.g.*, Fig. 1. Like Forbes, ***Montellano fails to disclose or suggest filtering to remove microorganisms and other microscopic particles. Montellano also does not disclose or suggest the use of heat to kill organisms.***

IV. CLAIMS 18-23, 26-30, 36-40 AND 42-55

The rejections of Claims 18, 20-21, 23, 26-29, 36, 40 and 42-43 should be withdrawn. This is because Forbes, Brenner and Montellano, either alone or in combination, fail to disclose or suggest, for example, a method of killing organisms and removing toxic substances from an enclosure by **(1)** heating a gas to a temperature that is lethal to organisms, **(2)** directing the heated gas into the enclosure, **(3)** monitoring the temperature of the enclosure using at least one temperature-indicating device, and/or **(4)** filtering the heated gas to remove fine particulate remains from the organisms that are suspended in the heated gas. Furthermore, the evidence of record (*e.g.*, the Declarations of Michael Geyer, Dr. Michael Linford, Larry Chase, and Sean Abbott) (see Appendix D) suggests that the present invention would not have been obvious to one of ordinary skill in the art in light of the aforementioned prior art references.

A. Claims 18, 20 and 26

Claim 18 provides "[a] method for killing organisms and ***removing of toxic substances from an enclosure***, which comprises the steps of: providing at least one ingress duct communicating with said interior of said enclosure; heating an environmentally acceptable gas to a temperature lethal to organisms comprising insects and at least one of fungi and bacteria; directing said heated gas into said enclosure through said at least one ingress duct for a time sufficient to raise the temperature of said enclosure to said lethal temperature to thereby kill said organisms; applying a pressure differential to said enclosure relative to atmospheric pressure to draw said heated gas out of said enclosure; ***filtering said heated gas to remove from said enclosure any fine, particulate remains from said organisms that are suspended in the heated gas; and exhausting said filtered heated gas from said enclosure to an external environment such that the particulate remains are substantially removed from said heated gas before its exhaustion***."

As acknowledged by the Examiner, Forbes does not disclose or suggest the step of filtering heated gas, or more particularly, "filtering said heated gas to remove from said enclosure any fine, particulate remains from said organism that are suspended in the heated gas." *See* Office Action at p. 3. To make up for this deficiency, the Examiner proposes the combination of Forbes with Brenner. *Id.*

As an initial matter, the Examiner has not met the rigorous legal standards for demonstrating a motivation or teaching to combine the references as proposed. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." *In re Kotzab*, 217 F.3d 1365, 1370 (Fed. Cir. 2000); *In re Lee*, 277 F.3d 1338, 1342-44 (Fed. Cir. 2002) (discussing the importance of relying

on objective evidence and making specific factual findings with respect to the motivation to combine references); *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347 (Fed. Cir. 1992). The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680 (Fed. Cir. 1990).

A statement that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). *See also In re Kotzab*, 217 F.3d 1365, 1371 (Fed. Cir. 2000) (Court reversed obviousness rejection involving technologically simple concept because there was no finding as to the principle or specific understanding within the knowledge of a skilled artisan that would have motivated the skilled artisan to make the claimed invention); *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308 (Fed. Cir. 1999) (the level of skill in the art cannot be relied upon to provide the suggestion to combine references.).

In this case, Brenner does not disclose the eradication of pests using heat. To the contrary, Brenner uses heat merely to cause the pests to vacate their harborages to permit subsequent collection using the vacuum intake unit. Putting aside the question of the efficacy of the Brenner process, it is clear that Brenner is not directed to the same problem faced by the present patent application. Since, the pests are not eradicated using a heat process, Brenner does not use filtration to remove the suspended particulate matter remaining from the heat eradication process. Indeed, the filtration system in Brenner is upstream from the heater/air exhaust unit 146, *i.e.*, ***Brenner is filtering the air before heating it rather than filtering the air after applying the heat***. Since Brenner is not directed to the same problem as the present invention, and the references contain no express teaching or suggestion for the combination, then the proposed combination is improper. The Examiner has provided no evidence of any

such teaching or suggestion.

As discussed above, Brenner is a handheld device that has no capability of exhausting heated gas from within an enclosure. Forbes discloses a closed loop system in which hot air is recirculated through the structure. *See* col. 2, ll. 48-53. Unlike the invention, Forbes fails to disclose the desirability of filtering the heated gas before exhausting the gas into the outside environment. As shown in Figure 1 of Forbes, the heated gas is simply vented to the environment without filtering. In contrast, the invention provides for the effective removal of the particulate remains of the killed organisms from the enclosure ***as well as*** the protection of the outside environment from the allergenic effects of these particulate remains.

Even if there was an adequate showing of motivation to combine the references as proposed, which Applicants do not concede for the reasons set forth above, the proposed combination of references fails to disclose all limitations of the claims. To establish *prima facie* obviousness of a claimed invention, ***all*** the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981 (CCPA 1974); *In re Wilson*, 424 F.2d 1382, 1385 (CCPA 1970) ("All words in a claim must be considered in judging the patentability of that claim against the prior art.") If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

As discussed above, Forbes fails to disclose or suggest the step of filtering the heated interior air or other gas to remove the suspended particulates that remain within the structure. Brenner fails to make up for this deficiency because it discloses filtering of the air ***before*** heating it rather than filtering the air ***after*** applying the heat. Even if the references were combined as proposed, the combination would not disclose all limitations of the claims since neither reference discloses filtration of the heated air to remove suspended particulates that are the byproduct of the heat eradication process. Therefore, the rejection of Claim 18, as well as Claims 20 and 26, which include similar limitations, for being obvious over Forbes in view of Brenner should be withdrawn.

The Examiner also proposed the combination of Forbes with Montellano. *See*

Office Action at p. 5. Montellano, however, does not disclose or suggest "filtering said heated gas to remove from said enclosure any fine, particulate remains from said organism that are suspended in the heated gas." The Examiner asserts that the metallic cloth described by Montellano to catch insects will also catch airborne microorganisms. *See* Office Action at p. 5. This assertion is without merit because there is no evidence that even if the "metallic cloth would look like cloth," it would be able to remove airborne particulates like the air filtration defined in the Appellants' claim. Plainly, filters like HEPA filters use much more complex technology than a simple net or metal cloth. Further, there is no evidence that the method to catch bugs claimed by Montellano would work to filter airborne particulate matter as claimed by Appellants. In fact, the evidence of record (*see* Appendix D) suggests that the method claimed by Montellano to catch bugs would be ineffective in removing smaller allergens.

In addition, one of ordinary skill would not have had any motivation to combine the antiquated vacuum/macro-filtration method of Montellano with the heat-treatment method of Forbes. Dr. Michael Linford, who is well acquainted with the method of Forbes, has provided testimony to this effect. *See* Appendix D, Declaration of Dr. Michael Linford ("Linford"), ¶ 11-12; *see also* ¶ 5-8 (explaining Dr. Linford's long familiarity with the Forbes method). Moreover, even if the references were to be combined, the claimed micro-filtration would still not result. *Id.* at ¶ 12.

Furthermore, Appellants submitted, on February, 22 2005 and pursuant to 37 C.R.F. § 1.132, compelling objective evidence to show that it would not have been obvious to combine Forbes and Montellano, or to otherwise modify Forbes so as to provide filtration during heating. In the following section, various objective criteria demonstrating non-obviousness of the invention are indexed to the Declarations of Dr. Linford and Mr. Geyer, for the Board's convenience.[1] The Board is referred to the original evidence in the Declarations themselves, which for the sake of brevity will not be repeated here.

[1] The Declaration of Mr. Geyer and Dr. Linford were discussed by the Examiner in the Office Action dated May 16, 2005.

Long-felt but Unmet Need: Both Mr. Geyer and Dr. Linford attest to the fact that the Forbes method and micro-filtration were in use for a long overlapping period of time (about ten years, in different fields) before anyone recognized the problem of particulate contamination or suggested the use of filtration as a solution. Linford, ¶ 5-10; *see also* Declaration of Michael Geyer ("Geyer"), ¶ 11-12.

Nature of the Problem to be Solved: Both Mr. Geyer and Dr. Linford attest to the fact that the nature of the problem solved by the invention – i.e., removal of microscopic allergens and other contaminants – is such that one of ordinary skill in the art of pest control would not have recognized the problem or an effective solution. Linford, ¶ 8-10; Geyer, ¶ 12-14.

Surprising Results: Both Mr. Geyer and Dr. Linford attest to the fact that the benefits of the invention, which include a dramatic reduction in particulate contamination compared to unfiltered methods, are both dramatic and surprising. Linford, ¶ 13; Geyer ¶ 5-9.

Recognition of Others: Dr. Linford, Mr. Geyer, and trained health professionals have recognized the surprising benefits of the invention. Linford, ¶ 13 & Ex. A; Geyer ¶ 10.

To further demonstrate the non-obviousness of the claims, Appellants submitted, on June 9, 2006 and pursuant to 37 C.F.R. § 1.132, the Declarations of Dr. Sean Abbott and Larry Chase.[2] The declarations present compelling objective evidence to show that the proposed combination would not have been obvious to one of ordinary skill, demonstrating, among other things: long-felt but unmet need, commercial success, and recognition of others. In the following sections, various objective criteria demonstrating non-obviousness of the invention are indexed to the Declarations of Dr. Abbott and Mr. Chase, for the Board's convenience. The Board is referred to the original evidence in the Declarations themselves, which for the sake of brevity will not be repeated here.

Long-felt but Unmet Need: Dr. Abbott attests to the fact that traditional methods

[2] The Declaration of Dr. Abbott and Mr. Chase were discussed by the Examiner in the Office Action dated May 29, 2007.

to treat buildings contaminated by mold, bacteria, termites, dust mites, and other microorganisms are insufficient and may actually create a corresponding problem of increased bioaerosol particulate matter. Declaration of Sean Abbott ("Abbott"), ¶ 4. In his declaration, Dr. Abbott refers to a publication in the Journal of Aerosol Science reporting that homes reclaimed from flood damage had significantly increased airborne microorganism levels. Abbott, ¶ 8. He also refers to a peer-reviewed publication in the Atmospheric Environment that specifically discusses the health implications of inhaling indoor aerosols. Abbott, ¶ 14. Neither reference suggests the desirability of filtration in conjunction with eradication using heated gas.

Commercial Success: Mr. Chase attests to the commercial success of the invention. Declaration of Larry Chase ("Chase"), ¶ 2, 4-10. This success has a nexus to the claims of issue, because the claimed combination of thermal eradication and micro-filtration, is widely adopted under the commercial name ThermaPureHeat™.

Recognition by Others: Mr. Chase attests to the recognition by others the invention has received. Chase, ¶ 2, 4, 11-12. In fact, the process set forth in the claims has been named "Best New Product" by the National Society of Professional Engineers. Chase, ¶ 4.

In view of the aforementioned arguments and declarations (*see* Appendix D), it is clear that Claim 18 is not obvious over Forbes in view of either Brenner or Montellano. Therefore, the rejection of Claim 18, as well as Claims 20 and 26, which include similar limitations, should be withdrawn.

B. Claims 19, 22 and 30

The rejections of Claims 19, 22 and 30 should also be withdrawn. Not only do these claims depend from independent Claims 18, 20 and 26, respectively, but they also include limitations that are not disclosed in the cited prior art. For example, neither Forbes, Brenner nor Montellano disclose the step of "passing said heated gas through a HEPA filter." *See* Claim 1. Therefore, these rejections should be withdrawn.

C. Claims 20, 28, 29, 51, 52, 54 and 55

The rejections of Claims 20, 28, 29 , 51, 52, 54 and 55 should also be withdrawn. Not only do Claims 28, 29, 54 and 55 depend from independent Claim 26, and Claims 51 and 52 depend from independent Claim 18, but these claims (including Claim 20) include limitations that are not disclosed in the cited prior art. For example, neither Forbes, Brenner nor Montellano disclose the step of "monitoring the temperature within said enclosure using said at least one temperature-indicating device." *See* Claim 20. While Forbes indicates that a particular temperature (*e.g.*, 120° F) needs to be maintained in the wood of the structure, Forbes does so by estimating the temperature of the wood of the structure – not by measuring the temperature using a "temperature-indicating device." *See*, *e.g.*, col. 4, ll. 46-63. Therefore, these rejections should be withdrawn.

D. Claims 21, 23, 47 and 48

The rejections of Claims 21, 23, 47 and 48 should be withdrawn for at least the reason that they depend from independent Claim 20.

E. Claims 27, 36-40, 42, 43, 49 and 53

The rejections of Claims 27, 36-40, 42, 43, 49 and 53 should be withdrawn for at least the reason that they depend from independent Claim 26.

F. Claims 44-46 and 50

The rejections of Claims 44-46 and 50 should be withdrawn for at least the reason that they depend from independent Claim 18.

Conclusion

Appellants respectfully request the reversal of the rejections of currently pending Claims 18-23, 26-30, 36-40 and 42-55, and allowance of these claims forthwith, for the reasons set forth above.

Appendix

Appealed Claims 18-23, 26-30, 36-40, 42-55, are attached hereto as Appendix A. Appendix B states that the Appellants are not aware of any other appeals or interferences that would bear on the Board's decision in this appeal. Copies of patents that were relied upon by the Examiner as to the grounds of rejections to be reviewed on Appeal are attached hereto as Appendix C. Copies of declaration that were submitted (and entered into evidence) pursuant to 37 C.F.R. § 1.132 during prosecution of the appealed claims, are attached hereto as Appendix D.

Fees

The Applicants believe that no fees are due in connection with the filing of this paper. This is because the fee for Filing a Brief in Support of an Appeal ($255) was previously paid on January 16, 2008 (Confirmation No. 3893). *See also* June 20, 2008 Office Action at p. 2 ("The previously paid ... appeal brief fee can be applied to the new appeal."). That being said, the Commissioner is authorized to charge any shortage in fees, including extension of time fees, to Deposit Account No. 50-0639.

Respectfully submitted,

Date: November 19, 2008

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